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| 10/729,478      | 12/05/2003  | Sivaram Balasubramanian | 99AB083-A           | 3088             |

63122 7590 07/21/2009  
ROCKWELL AUTOMATION, INC./BF  
ATTENTION: SUSAN M. DONAHUE, E-7F19  
1201 SOUTH SECOND STREET  
MILWAUKEE, WI 53204

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| EXAMINER |
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ZHE, MENG YAO

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2195

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| NOTIFICATION DATE | DELIVERY MODE |
|-------------------|---------------|

07/21/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@boylefred.com  
smdonahue@ra.rockwell.com

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/729,478 | <b>Applicant(s)</b><br>BALASUBRAMANIAN, SIVARAM |  |
|                              | <b>Examiner</b><br>MENG YAO ZHE      | <b>Art Unit</b><br>2195                         |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 24, 26-29 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24, 26-29, 31-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 24, 26-29, 31-34 are presented for examination.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 24, 26-29, 31-34 rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., International Publication No. WO 98/42101 (hereafter Smith) in view of Zweben et al., Patent No. 6,216,109 (hereafter Zweben).

4. Smith was cited in the previous office action.

5. As per claim 24, Smith teaches a method of coordinating a new control application program with other control application programs being performed on a distributed real-time operating system (Pg 2, lines 1-6), wherein the distributed real-time operating system is for use with a control system having spatially separated control hardware resources, the method comprising:

receiving the new control application program (Fig 2, unit 11; Pg 14, lines 22-27);  
identifying control hardware resources from a resource list matching control hardware resources required by the new control application program (Table 1);

allocating portions of a constraint associated with the new control application program to each identified control hardware resource (Pg 18, lines 19-25);

determining whether the allocated portions of the constraint of the new control application program can be met while requirements of the other control application programs also are met (Pg 17, lines 20-27).

allocating the new control application program to the identified control hardware resources (Pg 21, lines 6-18).

Although Smith teaches that resources could be time resources (Column 12, line 1, Pg 15, lines 19-21), Smith does not specifically teach in details that the method further comprises identifying a fixed time interval associated with the new control application program for completing execution of at least a portion of the new control application program, and executing within the portion of the fixed time interval allocated to each identified control hardware resource.

However, Zweben teaches identifying a fixed time interval associated with a task for completing execution of at least a portion of the new task, and executing within the portion of the fixed time interval allocated to each identified control hardware resource for the purpose of meeting time constraints of tasks (Column 16, lines 39-57).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Smith where the application control program needs time resources with the specifics of identifying a fixed time interval associated with a task for completing execution of at least a portion of the new task, and executing within the portion of the fixed time interval allocated to each identified control

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hardware resource for the purpose of meeting time constraints of tasks, as taught by Zweben, such that the task is actually the execution of the application control program that has specific timing requirements, because this allows the system to best satisfy a task's timing needs.

6. As per claim 26, Smith teaches collecting statistics regarding a usage of the control hardware resources as the new control application program and other control application programs are being performed; and optimizing the usage of the control hardware resources based at least in part upon the collected statistics (Pg 39, line 21- Pg 41, line 5).

7. As per claim 27, Smith teaches a method of operating an application program on a distributed control system having a plurality of hardware resources, the method comprising: receiving high-level requirements concerning the application program (Pg 14, lines 22-27); determining low-level requirements based upon the high-level requirements (Pg 15, lines 15-24); allocating at least one of the high-level requirements and the low-level requirements among at least some of the plurality of hardware resources (Pg 18, lines 19-25); operating the application program in accordance with the allocated requirements (Pg 18, lines 19-25).

Zweben teaches identifying a fixed time interval associated with a task for completing execution of at least a portion of the new task, and executing within the

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portion of the fixed time interval allocated to each identified control hardware resource for the purpose of meeting time constraints of tasks (Column 16, lines 39-57).

8. As per claim 28, Smith teaches wherein the high-level requirements include at least one of a hardware requirement, a completion-timing constraint, a message size, an inter-arrival period, a need for remote system services, and a type of priority (Pg 15, lines 19-21; Pg 41, line 20) and wherein the low-level requirements include at least one of an amount of memory, a network bandwidth, and a processor bandwidth (Tables 1, 2).

9. As per claim 29, Smith teaches wherein the allocating of the low-level requirements includes allocating the low-level requirements to both a primary hardware resource and an implicit hardware resource (Pg 5, lines 2-7; Table 1: network connection bandwidth corresponds to primary hardware resource and microphone corresponds to implicit hardware resource).

10. As per claim 31, Smith teaches wherein the control hardware resources include multiple nodes and each node includes a memory device, a processor and a communication means (Pg 16, lines 5-11).

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11. As per claim 32, Smith teaches wherein the new control application program is allocated to a plurality of nodes (Pg 16, line 24-Pg 17, line 12).

12. As per claims 33, 34, Smith in view of Zweben does not specifically teach wherein the fixed completion time requirement is based on the high-level and low-level requirements. However, since requirement levels are commonly practiced in the field of service quality insurance (Qos) at the time of the applicant's invention for the purpose of specifying different importance level for the requirement, it would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to specify requirement levels such that wherein the fixed completion time requirement is based on the high-level and low-level requirements, because this ensures that some of the most important requirements may be met when it is impossible to meet all requirements.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 24, 26-29, 31-34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MENGYAO ZHE whose telephone number is (571)272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/  
Supervisory Patent Examiner, Art Unit 2195